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Serial No. 07/715,900, filed June 19, 1991, now abandoned; which is a Continuation-in-Part of U.S. Application Serial No. 07/627,621, filed December 12, 1990, now abandoned; which is a Continuation-in-Part of U.S. Application Serial No. 07/479,858, filed February 14, 1990, now abandoned.

IN THE CLAIMS

~~Please cancel Claims 1-8.~~

Please add the following new Claims 9-52.

9. (New) An isolated DNA fragment, comprising a nucleotide sequence which encodes the amino acid sequence of SEQ ID NO: 4.

10. (New) The DNA fragment of Claim 9, wherein said nucleotide sequence has the sequence of SEQ ID NO: 3.

11. (New) The DNA fragment of Claim 9, wherein said nucleotide sequence has the sequence of from position 463 to position 1461 of SEQ ID NO: 3.

12. (New) A vector, comprising a DNA sequence which encodes the amino acid sequence of SEQ ID NO: 4.

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13. (New) The vector of Claim 12, wherein said DNA sequence comprises from base 463 to base 1461 of SEQ ID NO: 3.

14. (New) The vector of Claim 12, wherein said DNA sequence comprises SEQ ID NO: 3.

15. (New) A transformed microorganism, comprising a vector, said vector comprising a DNA sequence which encodes the amino acid sequence of SEQ ID NO: 4.

16. (New) The transformed microorganism of Claim 15, wherein said DNA sequence comprises from base 463 to base 1461 of SEQ ID NO: 3.

17. (New) The transformed microorganism of Claim 15, wherein said DNA sequence comprises SEQ ID NO: 3.

18. (New) An isolated DNA fragment, comprising a nucleotide sequence which encodes the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4.

19. (New) The DNA fragment of Claim 18, wherein said nucleotide sequence has the sequence of SEQ ID NO: 3.

20. (New) The DNA fragment of Claim 18, wherein said nucleotide sequence has the sequence of from position 463 to position 1461 of SEQ ID NO: 3.

21. (New) A vector, comprising a DNA sequence which encodes the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4.

22. (New) The vector of Claim 21, wherein said DNA sequence comprises from base 463 to base 1461 of SEQ ID NO: 3.

23. (New) The vector of Claim 21, wherein said DNA sequence comprises SEQ ID NO: 3.

24. (New) A transformed microorganism, comprising a vector, said vector comprising a DNA sequence which encodes the amino acid sequence of from position 63 to position 394 SEQ ID NO: 4.

25. (New) The transformed microorganism of Claim 24, wherein said DNA sequence comprises from base 463 to base 1461 of SEQ ID NO: 3.

26. (New) The transformed microorganism of Claim 24, wherein said DNA sequence comprises SEQ ID NO: 3.

27. (New) A polypeptide comprising an amino acid subsequence, said amino acid subsequence having the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4.

28. (New) The polypeptide of Claim 27, which has the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4.

29. (New) The polypeptide of Claim 27, which has the amino acid sequence of SEQ ID NO: 4.

30. (New) A method for producing a polypeptide comprising an amino acid subsequence, said amino acid subsequence having the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4, said method comprising culturing an organism comprising a heterologous sequence of DNA which encodes said polypeptide.

31. (New) The method of Claim 30, wherein said polypeptide has the amino acid sequence of from position 63 to position 394 of SEQ ID NO: 4.

32. (New) The method of Claim 30, wherein said polypeptide has the amino acid sequence of SEQ ID NO: 4.

33. (New) An isolated DNA fragment comprising a polynucleotide sequence that encodes a polypeptide having α -1,3-galactosyltransferase activity, wherein the polynucleotide sequence hybridizes to a nucleic acid having the nucleotide sequence of SEQ ID NO: 3 under conditions that include washing in 0.1X SSC, 0.5% SDS for 30 minutes at 65°C.

34. (New) The isolated DNA fragment of Claim 33, wherein the polynucleotide sequence encodes the polypeptide of SEQ ID NO: 4.

35. (New) The isolated DNA fragment of Claim 33, wherein the polypeptide comprises an amino acid sequence of a minimal catalytic domain of an α -1,3-galactosyltransferase.

36. (New) The isolated DNA fragment of Claim 35, wherein the polypeptide comprises amino acid positions 43 to 361 of SEQ ID NO: 4.

37. (New) The isolated DNA fragment of Claim 35, wherein the polynucleotide encodes a fusion protein which comprises the minimal catalytic domain and a second moiety selected from the group consisting of a spacer capable of being attached to a solid support and a component comprising an affinity ligand.

38. (New) A vector, comprising a DNA fragment which comprises a polynucleotide sequence that encodes a polypeptide having α -1,3-galactosyltransferase activity, wherein the polynucleotide sequence hybridizes to a nucleic acid having the nucleotide sequence of SEQ ID NO: 3 under conditions that include washing in 0.1X SSC, 0.5% SDS for 30 minutes at 65°C.

39. (New) The vector Claim 38, wherein the polynucleotide sequence encodes the polypeptide of SEQ ID NO: 4.

40. (New) The vector of Claim 38, wherein the polypeptide comprises an amino acid sequence of a minimal catalytic domain of an α -1,3-galactosyltransferase.

41. (New) The vector of Claim 40, wherein the polypeptide comprises amino acid positions 43 to 361 of SEQ ID NO: 4.

42. (New) The vector of Claim 40, wherein the polynucleotide encodes a fusion protein which comprises the minimal catalytic domain and a second moiety selected from the group consisting of a spacer capable of being attached to a solid support and a component comprising an affinity ligand.

43. (New) A transformed microorganism, comprising a vector comprising a polynucleotide sequence that encodes a polypeptide having α -1,3-galactosyltransferase activity, wherein the polynucleotide sequence hybridizes to a nucleic acid having the nucleotide sequence of SEQ ID NO: 3 under conditions that include washing in 0.1X SSC, 0.5% SDS for 30 minutes at 65°C.

44. (New) The transformed microorganism of Claim 43, wherein the polynucleotide sequence encodes the polypeptide of SEQ ID NO: 4.

45. (New) The transformed microorganism Claim 43, wherein the polypeptide comprises an amino acid sequence of a minimal catalytic domain of an α -1,3-galactosyltransferase.

46. (New) The transformed microorganism of Claim 45, wherein the polypeptide comprises amino acid positions 43 to 361 of SEQ ID NO: 4.

47. (New) The transformed microorganism of Claim 45, wherein the polynucleotide encodes a fusion protein which comprises the minimal catalytic domain and a second moiety selected from the group consisting of a spacer capable of being attached to a solid support and a component comprising an affinity ligand.

48. (New) A method of producing a polypeptide having α -1,3-galactosyltransferase activity, comprising culturing the transformed microorganism of Claim 43.

49. (New) A method of producing a polypeptide having α -1,3-galactosyltransferase activity, comprising culturing the transformed microorganism of Claim 44.

50. (New) A method of producing a polypeptide having α -1,3-galactosyltransferase activity, comprising culturing the transformed microorganism of Claim 45.

51. (New) A method of producing a polypeptide having α -1,3-galactosyltransferase activity, comprising culturing the transformed microorganism of Claim 46.

52. (New) A method of producing a polypeptide having α -1,3-galactosyltransferase activity, comprising culturing the transformed microorganism of Claim 47.--